

WHAT IS CLAIMED IS

1. A method for transmitting data comprising:

receiving a first transaction targeted to a first domain;

5 receiving a second transaction targeted to a second domain;

determining a first arbitration domain corresponding to said first transaction;

determining a second arbitration domain corresponding to said second transaction;

transmitting said first and second transaction concurrently in response to detecting

said first arbitration domain is not equal to said second arbitration domain;

10 and

serializing transmission of said first and second transaction in response to

detecting said first arbitration domain equals said second arbitration

domain.

15 2. The method of claim 1, further comprising:

generating a first mask corresponding to said first transaction, wherein said first
mask indicates said first domain; and

generating a second mask corresponding to said second transaction, wherein said
second mask indicates said second domain.

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3. The method of claim 2, wherein transmitting said first and second transaction
concurrently comprises:

conveying said first transaction to a first port;

conveying said second transaction to a second port;

25 transmitting said first transaction via said first port in response to detecting said
first transaction is permitted to be conveyed via said first port; and

transmitting said second transaction via said second port in response to detecting
said second transaction is permitted to be conveyed via said second port.

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4. The method of claim 3, wherein detecting said first transaction is permitted to be conveyed via said first port comprises comparing said first mask to a domain vector register of said first port, and wherein detecting said second transaction is permitted to be conveyed via said second port comprises comparing said second mask to a domain vector register of said second port.
- 5
5. The method of claim 4, wherein detecting said first transaction is permitted to be conveyed via said first port further comprises determining said domain vector register of said first port has a bit set which corresponds to a bit set in said first mask, and wherein detecting said second transaction is permitted to be conveyed via said second port further comprises determining said domain vector register of said second port has a bit set which corresponds to a bit set in said second mask.
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6. The method of claim 5, wherein determining said first and second arbitration domain comprises querying a lookup table.
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7. The method of claim 2, wherein a first port is coupled to said first domain and is not coupled to said second domain, and a second port is coupled to said first domain and said second domain, wherein serializing said first and second transaction comprises:
- 20
- conveying said first transaction to said first port and said second port concurrently; and
- conveying said second transaction to said first port and said second port concurrently, wherein said second transaction is conveyed to said first port and said second port subsequent to conveying said first transaction to said first port and said second port.
- 25
8. The method of claim 7, further comprising:

- transmitting said first transaction via said first port in response to detecting said
first transaction is permitted to be transmitted via said first port;
transmitting said first transaction via said second port in response to detecting said
first transaction is permitted to be transmitted via said second port;
- 5 transmitting said second transaction via said first port in response to detecting said
second transaction is permitted to be transmitted via said first port; and
transmitting said second transaction via said second port in response to detecting
said second transaction is permitted to be transmitted via said second port.
- 10 9. The method of claim 8, wherein detecting said first transaction is permitted to be
conveyed via said first port comprises comparing said first mask to a domain vector
register of said first port, and wherein detecting said first transaction is permitted to be
conveyed via said second port comprises comparing said first mask to a domain vector
register of said second port, and wherein detecting said second transaction is permitted to
15 be conveyed via said first port comprises comparing said second mask to a domain vector
register of said first port, and wherein detecting said second transaction is permitted to be
conveyed via said second port comprises comparing said second mask to a domain vector
register of said second port.
- 20 10. The method of claim 9, wherein detecting said first transaction is permitted to be
conveyed via said first port further comprises determining said domain vector register of
said first port has a bit set which corresponds to a bit set in said first mask, and wherein
detecting said first transaction is permitted to be conveyed via said second port further
comprises determining said domain vector register of said second port has a bit set which
25 corresponds to a bit set in said first mask, and wherein said detecting said second
transaction is permitted to be conveyed via said second port further comprises
determining said domain vector register of said second port has a bit set which
corresponds to a bit set in said second mask, and wherein said detecting said second
transaction is permitted to be conveyed via said first port further comprises determining

said domain vector register of said first port has a bit set which corresponds to a bit set in said second mask.

5 11. The method of claim 8, further comprising:

inhibiting transmission of said first transaction via said first port in response to
detecting said first transaction is not permitted to be transmitted via said
first port;

10 inhibiting transmission of said first transaction via said second port in response to
detecting said first transaction is not permitted to be transmitted via said
second port;

inhibiting transmission of said second transaction via said first port in response to
detecting said second transaction is not permitted to be transmitted via said
first port; and

15 inhibiting transmission of said second transaction via said second port in response
to detecting said second transaction is not permitted to be transmitted via
said second port.

20 12. The method of claim 11, wherein determining said first and second arbitration domain
comprises querying a lookup table.

25 13. The method of claim 1, wherein transmitting said first and second transaction
concurrently comprises:

conveying said first transaction to a first port;
conveying said second transaction to a second port;
transmitting said first transaction via said first port in response to detecting an
identifier corresponding to said first transaction indicates said first
transaction is permitted to be conveyed via said first port; and

transmitting said second transaction via said second port in response to detecting an identifier corresponding to said second transaction indicates said second transaction is permitted to be conveyed via said second port.

5 14. A switch comprising:

a first output port;

a second output port; and

an arbitration unit configured to detect a first transaction targeted to a first domain

10 and a second transaction targeted to a second domain, wherein said arbitration unit is configured to determine a first arbitration domain corresponding to said first transaction, and a second arbitration domain corresponding to said second transaction;

15 wherein said switch is configured to transmit said first and second transaction concurrently in response to detecting said first arbitration domain is not equal to said second arbitration domain, and wherein said switch is configured to transmit said first and second transaction serially in response to detecting said first arbitration domain equals said second arbitration domain.

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15. The switch of claim 14, wherein said arbitration unit is further configured to:

generate a first mask corresponding to said first transaction, wherein said first mask indicates said first domain; and

25 generate a second mask corresponding to said second transaction, wherein said
second mask indicates said second destination domain.

16. The switch of claim 15, wherein in transmitting said first and second transaction concurrently said switch is configured to:

- convey said first transaction to a first port;
convey said second transaction to a second port;
transmit said first transaction via said first port in response to detecting said first
transaction is permitted to be conveyed via said first port; and
5 transmit said second transaction via said second port in response to detecting said
second transaction is permitted to be conveyed via said second port.
17. The switch of claim 16, wherein detecting said first transaction is permitted to be
conveyed via said first port comprises comparing said first mask to a domain vector
10 register of said first port, and wherein detecting said second transaction is permitted to be
conveyed via said second port comprises comparing said second mask to a domain vector
register of said second port.
18. The switch of claim 17, wherein detecting said first transaction is permitted to be
conveyed via said first port further comprises determining said domain vector register of
said first port has a bit set which corresponds to a bit set in said first mask, and wherein
said detecting said second transaction is permitted to be conveyed via said second port
further comprises determining said domain vector register of said second port has a bit set
which corresponds to a bit set in said second mask.
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19. The switch of claim 18, wherein said arbitration unit is configured to determine said
first and second arbitration domain by querying a lookup table.
20. The switch of claim 15, wherein a first port is coupled to said first domain and is not
coupled to said second domain, and a second port is coupled to said first domain and said
25 second domain, wherein said switch is configured to serialize said first and second
transaction by:

DETAILED DESCRIPTION

conveying said first transaction to said first port and said second port
concurrently; and
conveying said second transaction to said first port and said second port
concurrently, wherein said second transaction is conveyed to said first port
5 and said second port subsequent to conveying said first transaction to said
first port and said second port.

21. The switch of claim 20, wherein subsequent to said conveying said first transaction to
said first port and said conveying said second transaction to said second port, said switch
10 is further configured to:

transmit said first transaction via said first port in response to detecting said first
transaction is permitted to be transmitted via said first port;
transmit said first transaction via said second port in response to detecting said
15 first transaction is permitted to be transmitted via said second port;
transmit said second transaction via said first port in response to detecting said
second transaction is permitted to be transmitted via said first port; and
transmit said second transaction via said second port in response to detecting said
second transaction is permitted to be transmitted via said second port.

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22. The switch of claim 21, wherein detecting said first transaction is permitted to be
conveyed via said first port comprises comparing said first mask to a domain vector
register of said first port, and wherein detecting said first transaction is permitted to be
conveyed via said second port comprises comparing said first mask to a domain vector
register of said second port, and wherein detecting said second transaction is permitted to be
conveyed via said first port comprises comparing said second mask to a domain vector
25 register of said first port, and wherein detecting said second transaction is permitted to be
conveyed via said second port comprises comparing said second mask to a domain vector
register of said second port.

23. The switch of claim 22, wherein detecting said first transaction is permitted to be conveyed via said first port further comprises determining said domain vector register of said first port has a bit set which corresponds to a bit set in said first mask, and wherein
- 5 detecting said first transaction is permitted to be conveyed via said second port further comprises determining said domain vector register of said second port has a bit set which corresponds to a bit set in said first mask, and wherein said detecting said second transaction is permitted to be conveyed via said second port further comprises determining said domain vector register of said second port has a bit set which
- 10 corresponds to a bit set in said second mask, and wherein said detecting said second transaction is permitted to be conveyed via said first port further comprises determining said domain vector register of said first port has a bit set which corresponds to a bit set in said second mask.
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24. The switch of claim 21, further comprising:
- inhibiting transmission of said first transaction via said first port in response to detecting said first transaction is not permitted to be transmitted via said first port;
- 20 inhibiting transmission of said first transaction via said second port in response to detecting said first transaction is not permitted to be transmitted via said second port;
- inhibiting transmission of said second transaction via said first port in response to detecting said second transaction is not permitted to be transmitted via said first port; and
- 25 inhibiting transmission of said second transaction via said second port in response to detecting said second transaction is not permitted to be transmitted via said second port.

25. The switch of claim 24, wherein said arbitration unit is configured to determine said first and second arbitration domain by querying a lookup table.

26. The switch of claim 14, wherein in order to transmit said first and second transaction

5 concurrently said switch is configured to:

convey said first transaction to said first output port;

convey said second transaction to said second output port;

transmit said first transaction via said first output port in response to detecting an

10 identifier corresponding to said first transaction indicates said first

transaction is permitted to be conveyed via said first output port; and

transmit said second transaction via said second port in response to detecting an

15 identifier corresponding to said second transaction indicates said second

transaction is permitted to be conveyed via said second output port.

27. A system comprising:

a first node corresponding to a first domain;

a second node corresponding to a second domain; and

20 a switch coupled to said first node and said second node, wherein said switch is

configured to:

detect a first transaction targeted to said first domain and a second

transaction targeted to said second domain,

25 determine a first arbitration domain corresponding to said first transaction,

and a second arbitration domain corresponding to said second

transaction,

transmit said first and second transactions concurrently in response to
detecting said first arbitration domain is not equal to said second
arbitration domain, and
transmit said first and second transactions serially in response to detecting
5 said first arbitration domain equals said second arbitration domain.

28. The system of claim 27, wherein said switch is further configured to:

generate a first mask corresponding to said first transaction, wherein said first
10 mask indicates said first domain; and
generate a second mask corresponding to said second transaction, wherein said
second mask indicates said second destination domain.

29. The system of claim 28, wherein in transmitting said first and second transaction
15 concurrently said switch is configured to:

convey said first transaction to a first port of said switch;
convey said second transaction to a second port of said switch;
transmit said first transaction via said first port in response to detecting said first
transaction is permitted to be conveyed via said first port; and
20 transmit said second transaction via said second port in response to detecting said
second transaction is permitted to be conveyed via said second port.

30. The system of claim 29, wherein detecting said first transaction is permitted to be
conveyed via said first port comprises comparing said first mask to a domain vector
25 register of said first port, and wherein detecting said second transaction is permitted to be
conveyed via said second port comprises comparing said second mask to a domain vector
register of said second port.

31. The system of claim 30, wherein detecting said first transaction is permitted to be conveyed via said first port further comprises determining said domain vector register of said first port has a bit set which corresponds to a bit set in said first mask, and wherein said detecting said second transaction is permitted to be conveyed via said second port
5 further comprises determining said domain vector register of said second port has a bit set which corresponds to a bit set in said second mask.

32. The system of claim 31, wherein said switch is configured to determine said first and second arbitration domain by querying a lookup table.

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33. The system of claim 28, wherein a first port of said switch is coupled to said first domain and is not coupled to said second domain, and a second port of said switch is coupled to said first domain and said second domain, wherein said switch is configured to serialize said first and second transaction by:

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conveying said first transaction to said first port and said second port
concurrently; and

conveying said second transaction to said first port and said second port
concurrently, wherein said second transaction is conveyed to said first port
20 and said second port subsequent to conveying said first transaction to said
first port and said second port.

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34. The system of claim 33, wherein subsequent to said conveying said first transaction to said first port and said conveying said second transaction to said second port, said switch
25 is further configured to:

transmit said first transaction via said first port in response to detecting said first transaction is permitted to be transmitted via said first port;

transmit said first transaction via said second port in response to detecting said
first transaction is permitted to be transmitted via said second port;
transmit said second transaction via said first port in response to detecting said
second transaction is permitted to be transmitted via said first port; and
5 transmit said second transaction via said second port in response to detecting said
second transaction is permitted to be transmitted via said second port.

35. The system of claim 34, wherein detecting said first transaction is permitted to be
conveyed via said first port comprises comparing said first mask to a domain vector
10 register of said first port, and wherein detecting said first transaction is permitted to be
conveyed via said second port comprises comparing said first mask to a domain vector
register of said second port, and wherein detecting said second transaction is permitted to
be conveyed via said first port comprises comparing said second mask to a domain vector
register of said first port, and wherein detecting said second transaction is permitted to be
15 conveyed via said second port comprises comparing said second mask to a domain vector
register of said second port.

36. The system of claim 35, wherein detecting said first transaction is permitted to be
conveyed via said first port further comprises determining said domain vector register of
20 said first port has a bit set which corresponds to a bit set in said first mask, and wherein
detecting said first transaction is permitted to be conveyed via said second port further
comprises determining said domain vector register of said second port has a bit set which
corresponds to a bit set in said first mask, and wherein said detecting said second
transaction is permitted to be conveyed via said second port further comprises
25 determining said domain vector register of said second port has a bit set which
corresponds to a bit set in said second mask, and wherein said detecting said second
transaction is permitted to be conveyed via said first port further comprises determining
said domain vector register of said first port has a bit set which corresponds to a bit set in
said second mask.

37. The system of claim 34, further comprising:

inhibiting transmission of said first transaction via said first port in response to

5 detecting said first transaction is not permitted to be transmitted via said first port;

inhibiting transmission of said first transaction via said second port in response to

detecting said first transaction is not permitted to be transmitted via said second port;

10 inhibiting transmission of said second transaction via said first port in response to
detecting said second transaction is not permitted to be transmitted via said first port; and

inhibiting transmission of said second transaction via said second port in response to
detecting said second transaction is not permitted to be transmitted via
15 said second port.

38. The system of claim 37, wherein said switch is configured to determine said first and second arbitration domain by querying a lookup table.

20 39. The system of claim 27, wherein said switch is configured to transmit said first and second transactions concurrently by:

conveying said first transaction to a first port;

conveying said second transaction to a second port;

25 transmitting said first transaction via said first port in response to detecting an identifier corresponding to said first transaction indicates said first transaction is permitted to be conveyed via said first port; and

transmitting said second transaction via said second port in response to detecting an identifier corresponding to said second transaction indicates said second transaction is permitted to be conveyed via said second port.